Commonwealth of Massachusetts
Executive Office of Energy & Environmental Affairs

Department of Environmental Protection
Western Regional Office • 436 Dwight Street, Springfield MA 01103 • 413-784-1100

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January 31, 2013

Mr. E. Scott Porter, Facility Manager
Pioneer Valley Resource Recovery Facility
Covanta Springfield, LLC
188 M Street
Agawam, MA 01001

RE: Agawam
Transmittal No.: X253843
Application No.: WE-13-002
Class: OP
FMF No.: 50005
AIR QUALITY PLAN APPROVAL

Dear Mr. Porter:

The Massachusetts Department of Environmental Protection ("MassDEP"), Bureau of Waste Prevention, has reviewed your Limited Plan Application ("Application") listed above. This Application concerns the the 2012 Standard Operating & Maintenance Manual at Pioneer Valley Resource Recovery Facility ("Covanta Springfield") in Agawam, Massachusetts.

This Application was submitted in accordance with 310 CMR 7.02 Plan Approval and Emission Limitations as contained in 310 CMR 7.00 "Air Pollution Control," regulations adopted by MassDEP pursuant to the authority granted by Massachusetts General Laws, Chapter 111, Section 142 A-J, Chapter 21C, Section 4 and 6, and Chapter 21E, Section 6. MassDEP's review of your Application has been limited to air pollution control regulation compliance and does not relieve you of the obligation to comply with any other regulatory requirements.

MassDEP has determined that the Application is administratively and technically complete and that the Application is in conformance with the Air Pollution Control regulations and current air pollution control engineering practice, and hereby grants this **Plan Approval** for said Application, as submitted, subject to the conditions listed below.

Please review the entire Plan Approval, as it stipulates the conditions with which the Facility owner/operator ("Permittee") must comply in order for the Facility to be operated in compliance with this Plan Approval.

1. DESCRIPTION OF FACILITY AND APPLICATION

Pursuant to Table 6c, Condition # 18 of Operating Permit #1-O-04-024, Covanta Springfield submitted a Limited Plan Approval Application for an updated Standard Operating & Maintenance Manual ("SOM") for the Pioneer Valley Resource Recovery Facility on December 21, 2012.

This SOM has been submitted to reflect the facility operation as it currently exists. The revisions to the 2012 version of the SOM consist of minor wording changes to clarify and reflect current operating practices as well as updates to operating parameters, equipment and operating procedures. The following list details specific changes made to the SOM which consisted of more than formatting and minor wording changes. In the list below, the section of the SOM where the revision occurs is identified and followed by an explanation of the revision.

- **Operations & Maintenance Manual Synopsis** – The description has been updated to state that the Trace Data Acquisition System was installed to replace the Phoenix system in 2012.
- **Section 2.1 Basic Combustion Theory Applicable to a Municipal Waste Combustor Unit** - This section has been revised in its entirety.
- **Section 4.1.2 Scope –** The primary auxiliary burner has been removed from the auxiliary burner system equipment.
- **Section 4.2 Operating Characteristics –** The description of the auxiliary burner operation has been updated to reflect current operating practices.
- **Section 4.3.5 Primary Auxiliary Burners –** This section has been removed.
- **Section 4.3.6 Secondary Auxiliary Burners** – This section has been renamed to 4.3.5 Auxiliary Burners and has been updated to reflect current operating practices.
- **Section 4.4.3 MWC Temperature Control –** This section has been updated to reflect current operating practices.
- **Section 4.4.3.1 Primary Auxiliary Burner** – This section has been removed.
- **Section 4.4.3.2 Secondary Auxiliary Burners** – This section has been renamed to 4.4.3.1 Auxiliary Burners and has been updated to reflect current operating practices.
- **Section 4.5.1.1 Cold Startup –** This section has been updated to reflect current operating practices.
- **Section 4.5.1.2 Warm Startup –** This section has been updated to reflect current operating practices.
- **Section 4.6 Maintenance** – This section has been updated to reflect current operating practices.
- **Section 4.7 Troubleshooting** - This section has been updated to reflect current operating practices.
- **Section 4.8 Emergency Procedures** – This section has been updated to reflect current operating practices.
- **Section 4.9.1.3 Reason Codes for Low Temperature –** This section has been updated to reflect current operating practices.

- **Section 8.2.4.4 Continuous Opacity Monitoring System** – The opacity emissions are continuously monitored by a Teledyne Model 560 Light Hawk monitor instead of a Phoenix Instruments Model OPAC 20/20.
- **Section 8.2.10.1 Sulfur Dioxide –** This section has been updated to reflect current operating practices.
- **Section 8.2.10.2 Opacity** - This section has been updated to reflect current operating practices.
- **Section 8.2.10.6 Baghouse Delta – P** – Attachment 1 Operating Permit Deviation Report has been removed from this section.
- **Section 11.2 Process Design** – This section has been updated to reflect current operating practices
- **Section 14.3 Emergency Procedures** - This section has been updated to reflect current operating practices.
- **Section 15.1 Content** - This section has been updated to reflect current operating practices.
- **Section 20.1 Records** – The date of the City of Springfield Wastewater IWDP Permit No. 21900 has been changed from June 4, 2008 to May 31, 2012.

STANDARD OPERATING & MAINTENANCE MANUAL STRUCTURE

The SOM is structured as follows:

- Section 1 Receiving & Inspection
- Section 2 Combustors
- Section 3 Hydraulic Power Pack
- Section 4 Combustor Draft Control & Auxiliary
- Section 5 Ash Handling
- Section 6 Boiler
- Section 7 GTC Economizer
- Section 8 Powdered Activated Carbon Feed System/Dry Scrubber/Baghouse
- Section 9 Sludge Recycling System
- Section 10 Cooling Water
- Section 11 Boiler Feedwater and Treating Chemicals
- Section 12 Boiler Blowdown
- Section 13 Steam, Condensate and Turbine-Generator
- Section 14 Plant, Instrument and Sootblowing Air
- Section 15 Fuel System
- Section 16 Material Handling
- Section 17 Electrical
- Section 18 Control System
- Section 19 Fire Protection System and Safety Equipment
- Section 20 Recordkeeping and Reporting

DESCRIPTION OF FACILITY OPERATION

The Facility began commercial operation in 1988 and consists of three municipal waste combustors ("MWCs"), each having a design capacity of approximately 136 tons per day of municipal solid waste ("MSW"), assuming a higher heating value of 4,500 Btu per pound. Heat is recovered from the combustion process in the form of steam. The steam turns a turbine generator to produce electricity. The short-term waste processing capacity of the Facility (4-hour block average) is based on 110 percent of the steam production rate during the most recent air emissions test. Annual throughput for the Facility is limited to 131,400 tons per year (MSW plus dry sludge solids).

The MWC units are Enercon Model WESG-120M, mass-burn refractory lined combustors. The primary combustion chamber of each combustor consists of six progressively lower refractory lined hearths. Solid waste is tumbled from step to step by hydraulically activated rams. Following the primary combustion chamber, a secondary chamber provides time for completion of combustion reactions. The secondary chamber is designed to provide combustion gas one second residence time at 1400°F.

The Facility is also equipped with a technology developed which allows for the combustion of sludge/FOG ("fats, oils and greases") in the MWC units. The patented technology involves atomizing a mixture of steam and sludge/FOG, and spraying it into the hottest part of the combustor where the water flashes off and the sludge/FOG solids are combusted. Sludge/FOG is delivered to the Facility by tanker trucks. The tankers are unloaded at a tank farm (four 50,000 gallon tanks) located behind the ash house. The sludge/FOG is then macerated, stored and pumped to an injection rack at the combustors where it is then atomized with steam and sprayed into the combustors.

Combustion gases from the secondary chambers pass into separate waste heat boilers sharing a common turbine, condenser, cooling tower and water treatment system. Steam drives the turbine generator, which generates electricity for internal plant use and for sale. Each boiler produces up to 32,200 pounds per hour of 750°F, 650 psig steam. The steam turbine generator generates up to 9.4 MW of electricity for internal plant use (1.9MW) and for sale (7.5MW) to the Western Massachusetts Electric Company ("WMECO"). The electricity sold to WMECO is enough to power approximately 7,500 homes.

Flue gas leaving each boiler passes through an economizer and then splits into two streams. A portion of the flue gas is recirculated back to the combustor where it is used to assist in controlling combustion gas temperatures entering the waste heat boilers, thereby inhibiting the formation of oxides of nitrogen. A portion of the recirculated flue gas is also used to dry and fluff the municipal solid waste fuel bed. The remainder of the flue gas is cooled in a gas temperature control heat exchanger for energy recovery and improved air quality control system performance before entering the dry scrubber.

The flue gas cleaning system for each combustor includes the dry injection of powdered activated carbon for mercury control and the dry injection of lime for acid gas control, followed

by a pulsed jet cleaned fabric filter (baghouse) for particulate control. Activated carbon and dry, finely powdered hydrated lime, $Ca(OH)_2$, are injected separately into the ductwork after the Gas Temperature Controller of each train. The combustor flue gas then enters a dry absorption reactor where it is mixed with the carbon and the lime to remove mercury and acid gases. The gas, now carrying dry reaction products and fly ash particulate, exits the reactor and is directed to the fabric filter for particulate removal and collection. Powdered activated carbon is automatically fed from bulk bags (one 900-pound bag per train) housed within a separate structure. A silo is provided for storage of the hydrated lime.

The particulate removed by the fabric filter is collected in the hoppers underneath the fabric filter compartment. The particulates are then discharged into a screw conveyor system discharging into a surge bin and rotary valve assembly. The rotary valve, in turn, discharges into a drag chain conveyor, which is common to all three fabric filters.

The cleaned flue gas then passes through the induced draft fan and is discharged into a 175-foot stack that is common to all three units. The continuous emission monitoring system ("CEMS") is located on the stack, downstream of the air pollution control systems. The CEMS monitors emissions of sulfur dioxide, oxides of nitrogen, carbon monoxide, oxygen and opacity. Fabric filter inlet temperatures, combustor secondary temperature, activated carbon injection rates and steam flow rates are also monitored. CEMS data are used for compliance demonstration purposes. Reports are submitted on a monthly basis to MassDEP. The Facility must also meet air quality control standards for total suspended particulate, beryllium, lead, mercury, hydrogen chloride, and polychlorinated dibenzo-p-dioxins and polychlorinated dibenzofurans. Compliance with these standards is demonstrated using emissions data generated during stack tests conducted every nine months. In 2010 the Facility installed an oxygen analyzer in the stack so that emissions could be corrected to 7% O_2.

The entire Facility is controlled from a central control room. A distributed control system ("DCS") collects operating information from various locations in the plant and displays it on LCD screens. The control room operator controls much of the plant directly from the DCS. Operating data logs are printed from the DCS and long-term data is archived in the system.

The ash management system is designed to: 1) transport ash from various locations in the plant to a central location; 2) control fugitive ash emissions from the Facility; and 3) facilitate recovery of ferrous metal from the bottom ash stream; and 4) size classify the bottom ash to remove oversize material and produce a beneficially reusable aggregate material. A portion of the processed bottom ash is mixed with the fly ash stream in the Ash Management Building prior to disposal at a permitted landfill.

Bottom ash is conveyed to the Ash Management Building using two drag chain conveyors discharging into one slipstick conveyor. Ferrous metal is removed at the discharge of the slipstick conveyor. The grizzly can then be used to size classify the bottom ash to produce Pioneer Valley processed bottom ash. A Beneficial Use Determination has been approved by the MassDEP which authorizes the use of this material as alternative daily cover and shaping and

grading material at area landfills. Processed bottom ash accumulates in a bunker on the floor of the Ash Management Building. Overs from the screening process are discharged to a separate bunker and disposed of at the Bondi Island Landfill.

The ferrous metal recovery system is wholly located in the Ash Management Building at the discharge of the slipstick conveyor. Major equipment includes a rotating magnetic drum and a vibrating finger screen. The rotating drum picks ferrous metal from the discharge of the slipstick conveyor and drops it onto the vibrating finger screen. Non-magnetic material (i.e. bottom ash) falls to the floor. Ferrous metal travels the length of the vibrating finger screen. The vibrating action of the screen knocks loose ash from the ferrous metal so that a minimum amount of ash adheres to the metal. Metal accumulates in a pile on the floor of the Ash Management Building. It is loaded from the accumulating pile into 40 cubic yard bins for transport to market.

Fly ash from the fabric filters is routed to the Ash Management Building using the collection, transfer and pugmill transfer conveyor. Inside the Ash Management Building, the pugmill transfer conveyor discharges to the pugmill surge bin. The pugmill surge bin is equipped with level indicators. Water is added to the fly ash through spray nozzles located at various points.

The pugmill mixer drops wetted, dust free fly ash into a pile onto the floor of the Ash Management Building floor, adjacent to the bottom ash pile. The piles are mixed using a front-end loader. Combined ash is then transferred to one of three ash storage bays located in the Ash Management Building. The bays provide the Facility about four days of ash storage capacity.

The existing emission limits applicable to the Facility are listed in Table 1.

Table 1: MWC Existing Emission Limitations

Particulate Matter	27.0 mg/dscm*
Sulfur Dioxide	29 ppmvd* or 75% reduction by weight or volume (24-hour daily geometric mean)
Hydrochloric Acid	29 ppmvd* or 95% reduction by weight or volume (whichever is least stringent)
Carbon Monoxide	100 ppmvd* (4-hour block average)
Nitrogen Oxides	167 ppmvd* (24-hour daily block average) 137 ppmvd* (365-day rolling average)
Beryllium	6.88×10^{-4} mg/dscm*
Cadmium	0.04 mg/dscm*
Lead	0.440mg/dscm*
Mercury	0.080 mg/dscm* (1 test) 0.028 mg/dscm* (rolling 4-test average)
PCDD/PCDF (tetra-octa)	30 ng/dscm*
Opacity	10% (6 minute block average)
Smoke	<number 1 of the chart

*Concentration limits are corrected to 7% O_2.

Any changes to the SOM shall be reported to MassDEP pursuant to Table 6c, Condition # 18 of Operating Permit #1-O-04-024, issued September 7, 2010.

2. MASSACHUSETTS ENVIRONMENTAL POLICY ACT

MassDEP has determined that the filing of an Environmental Notification Form (ENF) with the Secretary of Energy & Environmental Affairs, for air quality control purposes, was not required prior to this action by MassDEP. Notwithstanding this determination, the Massachusetts Environmental Policy Act (MEPA) and 301 CMR 11.00, Section 11.04, provide certain "Fail-Safe Provisions," which allow the Secretary to require the filing of an ENF and/or an Environmental Impact Report (EIR) at a later time.

3. APPEAL PROCESS

This Plan Approval is an action of MassDEP. If you are aggrieved by this action, you may request an adjudicatory hearing. A request for a hearing must be made in writing and postmarked within twenty-one (21) days of the date of issuance of this Plan Approval.

Under 310 CMR 1.01(6)(b), the request must state clearly and concisely the facts, which are the grounds for the request, and the relief sought. The hearing request along with a valid check payable to the Commonwealth of Massachusetts in the amount of one hundred dollars ($100.00) must be mailed to:

Commonwealth of Massachusetts
Department of Environmental Protection
P.O. Box 4062
Boston, MA 02211

This request will be dismissed if the filing fee is not paid, unless the appellant is exempt or granted a waiver as described below. The filing fee is not required if the appellant is a city or town (or municipal agency), county, or district of the Commonwealth of Massachusetts, or a municipal housing authority.

MassDEP may waive the adjudicatory hearing-filing fee for a person who shows that paying the fee will create an undue financial hardship. A person seeking a waiver must file, together with the hearing request as provided above, an affidavit setting forth the facts believed to support the claim of undue financial hardship.

Should you have any questions concerning this Plan Approval, please contact Cortney Danneker by telephone at 413-755-2234, or in writing at the letterhead address.

Sincerely,

_____
Marc Simpson
Air Quality Permit Chief
Bureau of Waste Prevention
Western Region

cc: WERO AQ plan file
WERO AQ approval file

ecc: Yi Tian – MassDEP Boston
Peter Czapienski – MassDEP WERO